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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/705,237	11/02/2000	Michio Osada	4029	4586
21553	7590	12/09/2003	EXAMINER	
FASSE PATENT ATTORNEYS, P.A. P.O. BOX 726 HAMPDEN, ME 04444-0726			NGUYEN, THUKHANH T	
			ART UNIT	PAPER NUMBER
			1722	

DATE MAILED: 12/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/705,237

Applicant(s)

OSADA ET AL.

Examiner

Thu Khanh T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 4-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-15 is/are allowed.
- 6) ☒ Claim(s) 1, 4-11 and 16-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 9-11 and 22 are again rejected under 35 U.S.C. 103(a) as being unpatentable over the Japanese reference Japanese reference (58-212840 – JP1).

The JP1 reference teaches a molding apparatus having a surface coating layer consisting of a binary nickel-tungsten alloy, which has 20 wt% tungsten and the balance of nickel to improve the durability of the mold surface (see abstract).

The JP1 reference fails to disclose that the coating layer contains more than 20 wt% and less than 44 wt% of tungsten.

However, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the JP1 reference by provide a coating layer with appropriate composition of tungsten to improve the performance of the mold surface. It is well settled that determination of optimum values of cause effective variables such as these process parameters is within the skill of one practicing in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90

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(CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) (The prior art taught carbon monoxide concentrations of “about 1-5%” while the claim was limited to “more than 5%.” The court held that “about 1-5%” allowed for concentrations slightly above 5% thus the ranges overlapped.) Similarly, a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). In this case, 20% is very close to more than 20% or even 21% is still very close to 20%, and would expect to have the same properties.

3. Claims 1,4 and 10 are again rejected under 35 U.S.C. 103(a) as being unpatentable over the second Japanese reference (10-202,698 – JP2).

The JP2 reference teaches a molding die comprising a coating layer of nickel and tungsten alloy (see abstract), wherein the coating layer is made of 44-60 wt% tungsten and has a thickness of 15 $\mu$ m.

The JP2 reference fails to disclose that the coating layer contains more than 20 wt% and less than 44 wt% of tungsten.

However, it would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the JP1 reference by provide a coating layer with appropriate composition of tungsten to improve the performance of the mold surface. It is well settled that determination of optimum values of cause effective variables such as these process parameters is within the skill of one practicing in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

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In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) (The prior art taught carbon monoxide concentrations of “about 1-5%” while the claim was limited to “more than 5%.” The court held that “about 1-5%” allowed for concentrations slightly above 5% thus the ranges overlapped.) Similarly, a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). In this case, 44% is very close to less than 44% and would expect to have the same properties.

4. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Japanese reference (10-286,845 – JP3) in view of one of the Japanese references (10-202,698 – JP2) or (58-212,840 – JP1).

The JP3 reference discloses a system for manufacturing of resin sealing semiconductor devices, comprising a die (20, 21) with a die cavity for sealing and molding electronic components (10, see the English abstract), wherein the die having a nickel, phosphorus and tungsten coating layer of 2 $\mu$ m-10 $\mu$ m. The JP3 reference, however, fails to disclose that the coating is a nickel-tungsten alloy with wt% of tungsten is more than 20% and less than 44%.

The JP2 reference discloses a molding die comprising a coating layer of nickel and tungsten alloy (see abstract), wherein the coating layer is made of 44-60 wt% tungsten and has a thickness of 15 $\mu$ m.

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The JP1 reference teaches a molding apparatus having a surface coating layer consisting of 20 wt% tungsten and the balance is nickel to improve the durability of the mold surface (see abstract).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the JP3 reference by providing a nickel-tungsten coating with the tungsten as taught by JP2, JP1 references, because the nickel-tungsten coating would provide high corrosion resistance, or improve the durability of the mold surface.

In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990) (The prior art taught carbon monoxide concentrations of “about 1-5%” while the claim was limited to “more than 5%.” The court held that “about 1-5%” allowed for concentrations slightly above 5% thus the ranges overlapped.) Similarly, a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). In this case, 20% is very close to more than 20% or even 21% is still very close to 20%, or 44% and less than 44% are also very close, and would expect to have the same properties.

5. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the JP1 in view of the JP3.

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The JP1 discloses a mold surface coating comprising a binary nickel-tungsten alloy as described above. However, the JP1 fails to disclose the coating has a thickness of  $1\mu\text{m}$ - $20\mu\text{m}$ .

The JP3 discloses a system for manufacturing of resin sealing semiconductor devices, comprising a die (20, 21) with a die cavity for sealing and molding electronic components (10, see the English abstract), wherein the die having a nickel, phosphorus and tungsten coating layer of  $2\mu\text{m}$ - $10\mu\text{m}$ .

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the JP1 reference by providing a coating layer having a thickness of  $2\mu\text{m}$ - $10\mu\text{m}$  as taught by the JP3 reference, because this thickness would be thick enough to protect the mold from corrosion.

***Allowable Subject Matter***

6. Claims 12-15 are allowed.
7. Claims 5-8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
8. The following is an examiner's statement of reasons for allowance: the prior art fails to teach or suggest a die comprising a fixed die, a movable die, a concavity receiving an setting a support having the electronic component mounted thereto, a pot arranged at one die, a plunger fixed internal to the pot, a resin channel to transport resin material from the pot throughout the die cavity; and a coating layer on the surface of the upper and lower cavity, on an internal surface of the resin channel, on an internal surface of the concavity, on the internal surface of the

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pot, on the parting line between the dies, and on an external surface of the plunger; wherein the coating consisting of nickel-tungsten alloy with 20-60wt% tungsten.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Response to Arguments***

9. Applicant's arguments filed September 26, 2003 have been fully considered but they are not persuasive.

10. The Applicants have argued that *In re Boesch* is not applicable to the present case. *In re Boesch* established that a *prima facie* case of obviousness could be rebutted by proving unexpected result. Because the claimed range is so close to the prior art, it is a *prima facie* case of obviousness. Furthermore, although the ranges are not overlapped, one of ordinary skill in the art would, through routine experiments, be able to determine the optimum value around the teaching of the prior art.

11. In the current case, the *prima facie* case of obviousness exists because the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). Moreover, the Applicants have not rebutted the *prima facie* case of obviousness based on overlapping ranges by showing the criticality of the claimed range.



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12. In regard to the JP1 '840 reference, the Applicant argued that this reference teaches away from the presently claims, "by expressly limiting the tungsten content to a maximum of 20wt%". This argument is not persuasive because even though the JP'840 reference discloses the alloy contains 20wt% of tungsten, it does not limiting the content to the maximum of 20%. Further, the graph shows in Figure 2 of this reference shows that the tungsten could be more than 20wt%. Therefore, the disclosure of the prior art does not contradict to the obviousness rejection, and the reference does not teach away from the current claims.

13. Similarly, the JP2'698 reference teaches a coating having 44-60wt% of tungsten. Because the claimed rang is so close to this range with less than 44% and would be expected by a skill artisan to have the same properties, it is a prima facie case of obviousness.

14. The claimed range would be critical and would affect the patentability of the claims if it achieves unexpected results. The Applicants have not disclosed any criticality and unexpected results for a coating containing more than 20wt% to less than 44wt% of tungsten.

15. Moreover, the specification of the current invention provides the experimental data on pages 8-9, in which the coating with 20%, 40%, and 60wt% of tungsten have overlapping results. In fact, the results for the 40% and 60% coating are exactly the same. Thus, there is no criticality to the range of more than 20% and less than 44% of tungsten.

16. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the

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applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

### *Conclusion*

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thu Khanh T. Nguyen whose telephone number is 571-272-1136. The examiner can normally be reached on Monday- Friday, 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 703-308-0457. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

TN

November 26, 2003



ROBERT DAVIS  
PRIMARY EXAMINER  
GROUP 1300-1200  
12/1/03